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10/593,618

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Yang Hwan No

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EXAMINER

SHANNON, MICHAEL T

ART UNIT

PAPER NUMBER

2612

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,618	<b>Applicant(s)</b> NO ET AL.	
	<b>Examiner</b> MICHAEL SHANNON	<b>Art Unit</b> 2612	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-11 and 14-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11 and 14-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of the Claims***

1. This is in response to the applicant's amendment filed on January 5, 2011.  
Claims 1-7, 9-11, and 14-22 are currently pending. Claims 8 and 12-13 were canceled.  
Claims 1-7, 9-11, and 14-22 were amended.

### ***Claim Objections***

2. Claims 1, 3 and 10 are objected to because of the following informalities:
  - a. Claim 1, lines 1-2: the preamble uses improper grammar. It is suggested that the preamble be revised similarly to those of claims 19-22.
  - b. Claim 3, line 5: spelling error: "detachable receives" should be changed to "detachably receives", similarly to claims 19 and 20.
  - c. Claim 10, lines 7 and 8: it is suggested that both instances of "power connection connector" be changed to "power source connection connector", for consistency with the original terminology defined in claim 9, and to avoid confusion with the "power connector".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 4 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 4 includes the limitations “**one of** the line connector or the line connection connector is formed as a female terminal and **the other of** the line connector or the line connection connector is formed as a male terminal” (emphasis added), and goes on to define a "male terminal" as one that receives "the female terminal". However, claim 3, from which this claim depends, contains the limitation “the line connection connector detachable receives the line connector”. Based on applicant’s definitions in claims 3 and 4, it appears that the only possible configuration is for the “line connection connector” to be the “male terminal” and the “line connector” to be the “female terminal”. It is also noted that applicant’s definition of male and female terminals is contrary to that which is conventional in the art, in which a female terminal receives a male terminal.

b. Claim 22 recites the “the line connector” in line 14 on page 12. There is insufficient antecedent basis for this limitation in the claim. This rejection is maintained from the previous Office Action, and was not specifically addressed by applicant in their response.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al. (US 2004/0111496 A1), in view of Ito et al. (U.S. Patent 4,808,841).

a. Re: Claim 1, Han discloses:

“A home appliance configured to communication over a power cable” (Para. [0010]);

“a body that defines an exterior of the home appliance” (Fig. 2: **A2**, **A3**, or **A4**);

“a main controller provided at the body, wherein the main controller controls operation of the home appliance and generates data” (Para. [0028], where microcomputer **23** and communication controller **24** together make up a "main controller"; where generating data is considered implicit to the ability to transmit data; and, where all appliances (**A1** to **A4**) are considered to have the same structure);

“a power cable communication modem provided at the body, wherein the power cable communication modem transmits” data “from the main controller to a remote monitor” (Para. [0023] – [0024], any of modems **B2** to **B4**, and where Para. [0029] provides further evidence that a modem can be co-located at an appliance.

Furthermore, Fig. 2 shows that network master **A1** (considered a “remote monitor”) is physically remote from any of **A2** to **A4** (which are considered “home appliances”).

Han does not specifically disclose that the “data” corresponds to “an operation mode of the home appliance” or that the remote monitor “displays the data remotely.”

However, Han does disclose the general ability to display information regarding a home

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appliance at the remote monitor (Para. [0024]). Ito discloses a centralized control system for home electric appliances with a similar structure to that of Han, using power line communications (Fig. 3 and Col. 4, lines 6-14, where either of controllers **18** or **19** are considered a “remote monitor”). Ito (Col. 2, line 39 – Col. 3, line 13) discloses the ability to transmit *status information* (where *on/off status* is considered analogous to an “operation mode”) about the state of an appliance to the remote monitor, and to display that information at the remote monitor (via display means **5**). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that the monitoring means **10** and control means **7** of Ito (corresponding to the “main controller” of Han) could be integrated, as opposed to separate components, as is supported by previous case law.

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Ito in the system of Han, in order to allow a user to remotely monitor, in a centralized manner, the settings of a home appliance, thereby facilitating the user’s operations (Ito, Col. 1, lines 30-39 and Col. 4, lines 23-49).

b. Re: Claim 2, Han and Ito render obvious the subject matter of claim 1, as described above. Han further discloses: “wherein the power cable communication modem is connected to signal lines of the main controller and to a power line of the home appliance so as to transmit data to and receive data from the remote monitor.” (Para. [0024] – [0026] and [0028], and Fig. 3, via home appliance connector **12** and power line connector **11**).

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7. Claims 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al. and Ito et al. as applied to claim 1 above, and further in view of Wood (U.S. Patent 6,007,372).

a. Re: Claim 3, Han and Ito render obvious the subject matter of claim 2, as described above. While Han discloses connections between the modem and appliance, and modem and power line, Han does not specifically disclose "a line connector having the signal lines of the main controller and the power line of the home appliance both connected thereto; and a line connection connector provided at the power cable communication modem, wherein the line connection connector detachable receives the line connector so as to connect the power cable communication modem to the signal lines of the main controller and the power line of the home appliance."

Wood discloses a power/data cable system for a peripheral of an electronic device in which it is known to join separate power and data lines in a "Y" configuration at a connector **13** prior to attaching to a connector fitting **4** of the peripheral device (Col. 3, lines 15-20 and lines 54-62, and Fig. 1B; where **13** corresponds to "line connector", **4** corresponds to "line connection connector", and Fig. 1B shows detachment).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Wood in the teachings of Han and Ito, in order to allow a connection of the modem to the home appliance and power, with minimal effort using familiar equipment (COM port cabling and connections) (Wood, Col. 2, lines 12-17).

b. Re: Claim 19, Han, Ito, and Wood render this claim obvious for the same reasons described in the rejections of claims 1-3 above, which contain the limitations of this claim.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al., Ito et al. and Wood as applied to claim 3 above, and further in view of Chang (U.S. Patent 5,860,826).

Re: Claim 4, Han, Ito and Wood render obvious the subject matter of claim 3, as described above, including the ability to "detachably connect the line connector and the line connection connector", as described in the rejection of claim 3. Han does not specifically disclose that "one of the line connector or the line connection connector is formed as a female terminal and the other of the line connector or the line connection connector is formed as a male terminal so as to receive the female terminal therein". However, Chang discloses fasteners for securing matching electrical connectors (Col. 1, lines 4-6), in which it was known to utilize male and female terminals to secure connectors (Col. 3, lines 4-11).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Chang in the teachings of Han, Ito, and Wood in order to ensure the connectors are firmly retained together (Chang, Col. 3, lines 4-11).

9. Claims 5-7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al., Ito et al. and Wood as applied to claim 3 above, and further in view of Noorily (U.S. Patent 4,731,032).



a. Re: Claim 5, Han, Ito and Wood render obvious the subject matter of claim 3, as described above. Han does not specifically disclose “a connector cover that is detachably connectable to the line connector so as to prevent foreign materials from infiltrating into the line connector when the power cable communication modem is not mounted to the line connector.” However, Noorily discloses a protective cover for an electrical connector that is detachable (Col. 1, lines 5-9), that prevents foreign substances from entering when the electrical connector is disconnected (Col. 4, lines 50-61).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Noorily in the teachings of Han, Ito and Wood in order to protect the exposed contacts of the connector when it is unmated (Noorily, Col. 1, lines 19-27).

b. Re: Claim 6, Han, Ito, Wood and Noorily render obvious the subject matter of claim 5, as described above. Noorily further renders obvious “the connector cover includes: a plug portion that is received in the line connector; and a cover portion formed at a rear of the plug portion for enclosing a circumference of the line connector.” (Col. 4, lines 25-61, as further evidenced by the Figures). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Noorily in the teachings of Han, Ito and Wood, in order to protect the exposed contacts of the connector when it is unmated (Noorily, Col. 1, lines 19-27).

c. Re: Claim 7, Han, Ito, Wood and Noorily render obvious the subject matter of claim 6, as described above. Noorily further renders obvious “wherein the plug

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portion includes: a hook that detachably engages a hook slot formed inside of the line connector; and an end that extends from the hook and through a pass through hole formed in the cover portion so as to be exposed to an outside of the cover portion.” (Col. 3, lines 25-31, Col. 4, lines 47-50 and Fig. 7, latch portion **34a** (considered the “hook”) and shoulder **50a** (considered the “hook slot”). Col. 3, lines 35-41 and Fig. 5 discloses flanges **24c** and **24d** which are integrally connected to **34a**).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Noorily in the teachings of Han, Ito and Wood in order to provide a secure connection between the protective cover and the connector, while still facilitating the installation and removal of the cover (Noorily, Col. 3, lines 35-41).

d. Re: Claim 20, Han, Ito, Wood and Noorily render this claim obvious for the same reasons described in the rejections of claims 1-3 and 5 above, which contain the limitations of this claim.

10. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al. and Ito et al. as applied to claim 2 above, and further in view of Brooks et al. (U.S. Patent 5,185,881).

a. Re: Claim 9, Han and Ito render obvious the subject matter of claim 2, as described above. Han further discloses:

“a signal connector connected to the signal lines of the main controller;” (Para. [0028], modem connector **21**);

“a signal connection connector provided at the power cable communication modem and connected to the signal connector;” (Para. [0026], appliance connector **12** and Fig. 3);

“a power source connection connector provided at the power cable communication modem and connected to” a power source (Para. [0026], power line connector **11**).

Han does not specifically disclose “a power connector connected to the power line of the home appliance”. Brooks discloses a power supply module of an electronic device (Col. 3, lines 1-11) with a power supply connector **112** for interconnecting the power supply with another module of the device (Col. 4, lines 43-46). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Brooks in the teachings of Han and Ito, in order to facilitate repair of modules (Brooks, Col. 1, lines 27-30 and lines 35-40), such as a modem, within an electronic device, such as a home appliance, by allowing them to be detachably connected to a power supply.

b. Re: Claim 21, Han, Ito, and Brooks render this claim obvious for the same reasons described in the rejections of claims 1, 2 and 9 above, which contain the limitations of this claim.

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Han, Ito and Brooks as applied to claim 9 above, and further in view of Chang.

Re: Claim 10, Han, Ito and Brooks render obvious the subject matter of claim 9, as described above, including the “signal connector”, “signal connection connector”,

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"power connector", and "power source connector", but do not specifically disclose "wherein the signal connector and the signal connection connector, and the power connector and the power source connection connector are detachably connected to each other, respectively, one of the signal connector or the signal connection connector being formed as a female terminal and the other of the signal connector or the signal connection connector being formed as a male terminal, and one of the power connector or the power connection connector being formed as a female terminal and the other of the power connector or the power connection connector being formed as a male terminal." However, Chang discloses fasteners for securing matching electrical connectors (Col. 1, lines 4-6), in which it was known to utilize male and female terminals to join connectors (Col. 3, lines 4-11).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Chang in the teachings of Han, Ito and Brooks in order to ensure the connectors are firmly retained together (Chang, Col. 3, lines 4-11).

12. Claims 11 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han and Ito as applied to claim 1 above, and further in view of Denninghoff et al. (US 2004/0221194 A1).

a. Re: Claim 11, Han and Ito render obvious the subject matter of claim 1, as described above. Han does not specifically disclose "wherein the power cable communication modem is a built-in type modem provided at an inside of the body." However, it would have been obvious to one of ordinary skill in the art at the time of the

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claimed invention to physically connect a power line communication modem to an associated device, either internally or externally, as further evidenced by Denninghoff ([0027]), because the modem is intended to provide a communication interface for the device and would therefore need to be in proximity to the device.

b. Re: Claims 14-16, Han and Ito render obvious the subject matter of claim 1, as described above. Han does not specifically disclose “wherein the power cable communication modem is an exterior mounting type modem that is exposed at an outside of the body”, “is fixed to an outside surface of the body with fastening members”, or that the modem “or the body includes a positioning boss, and the other of the power cable communication modem or the body includes a positioning hole corresponding to the positioning boss for receiving the positioning boss therein.” However, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to physically connect a power line communication modem to an associated device, either internally or externally, as further evidenced by Denninghoff ([0027]), because the modem is intended to provide a communication interface for the device and would therefore need to be in proximity to the device. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use well known fastening members or positioning bosses and holes to secure the modem to the device, in order to facilitate access to the modem for any needed repairs.

13. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han and Ito as applied to claim 1 above, and further in view of Tustison et al. (U.S. Patent 6,995,658 B2).

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a. Re: Claim 17, Han and Ito render obvious the subject matter of claim 1, as described above. Han does not specifically disclose "a noise filter in the body that prevents noise from a power source from being transmitted to the main controller and the power cable communication modem." However, Tustison discloses communication over a power line (Col. 1, lines 6-10) comprising such a filter (Col. 6, line 31 - Col. 7, line 3, filter **311** for filtering noise from a power line **312** to a modem **306**, and also to host electronics **304** as further evidenced by Fig. 3). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Tustison in the teachings of Han and Ito, in order to reduce voltage fluctuation to a nominal level (Tustison Col. 6, lines 40-43), thus facilitating receipt of data over the power line.

b. Re: Claim 18, Han, Ito, and Tustison render obvious the subject matter of claim 17, as described above. Han does not specifically disclose "wherein the noise filter has an input terminal connected to an external power line that provides power to the home appliance, and an output terminal connected to the main controller and the power cable communication modem." However, Tustison discloses communication over a power line (Col. 1, lines 6-10) comprising such a filter (Col. 6, line 31 - Col. 7, line 3, filter **311**, where Fig. 3 shows the connections). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Tustison in the teachings of Han and Ito in order to reduce voltage fluctuation to a nominal level (Tustison Col. 6, lines 40-43), thus facilitating receipt of data over the power line.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Han et al., in view of Ito, Brooks and Noorily.

Re: Claim 22, Han and Ito render obvious “A home appliance configured to communicate over a power cable, comprising: a body that defines an exterior of the home appliance; a main controller provided at the body, wherein the main controller generates data corresponding to an operation state of the home appliance; a power cable communication modem provided at the body, wherein the power cable communication modem transmits the data from the main controller to a remote monitor that displays the data remotely”, as described in the rejection of claim 1 above.

Han further discloses:

“a signal connector connected to signal lines of the main controller;” (Para. [0028], modem connector **21**);

“a signal connection connector provided at the power cable communication modem for connection to the signal connector;” (Para. [0026], appliance connector **12** and Fig. 3);

“a power source connection connector provided at the power cable communication modem for connection to” a power source (Para. [0026], power line connector **11**).

Han does not specifically disclose “a power connector connected to a power line of the home appliance”. Brooks discloses a power supply module of an electronic device (Col. 3, lines 1-11) with a power supply connector **112** for interconnecting the power supply with another module of the device (Col. 4, lines 43-46). It would have

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been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Brooks in the teachings of Han and Ito, in order to facilitate repair of modules (Brooks, Col. 1, lines 27-30 and lines 35-40), such as a modem, within an electronic device, such as a home appliance, by allowing them to be detachably connected to a power supply.

Han does not specifically disclose “a connector cover detachably connectable to the line connector so as to prevent foreign materials from infiltrating into the line connector when the power cable communication modem is not mounted to the line connector.” However, Noorily discloses a protective cover for an electrical connector that is detachable (Col. 1, lines 5-9), and that prevents foreign substances from entering when the electrical connector is disconnected (Col. 4, lines 50-61).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to incorporate the teachings of Noorily in the teachings of Han, Ito and Brooks in order to protect the exposed contacts of the connector when it is unmated (Noorily, Col. 1, lines 19-27).

### ***Response to Arguments***

15. Applicant's arguments filed 1/5/2011 have been fully considered but they are not persuasive.

a. Regarding independent claim 1, applicant argues that in Han's system, the appliance A1 functions as a network master, where the listing of appliances is displayed and transmission of data is controlled. Thus, applicant argues that in Han's system, any



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data is displayed locally to the appliance, and not remotely, at a remote monitor. This argument is not persuasive. The exemplary network master in Han, appliance A1, is shown to be physically remote (in Fig. 2) from appliances A2 through A4, which each have their own controller for controlling the respective appliance and generating appliance-related data. Thus, when appliance A1 is considered to be the "remote monitor" as claimed, and any of appliances A2 to A4 are considered a "home appliance" as claimed, the data about appliances A2 to A4 is displayed remotely from those particular appliances at network master A1. These aspects have been clarified in the prior art rejection of claim 1 above.

b. Applicant's remaining arguments with respect to independent claim 1 as amended have been considered but are moot in view of the new grounds of rejection. Applicant has amended claim 1 to specifically require the generation and transmission of "operational" data about the home appliance, and the display of that data remotely, which were limitations that were not present at the time of the previous Office Action. Applicant is referred to the rejection of claim 1 above for how those amended limitations are addressed in view of the prior art.

c. Applicant's arguments regarding the other pending claims substantially rely on their arguments regarding independent claim 1, which are addressed above.

### ***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Yoon et al. (US 2002/0073183 A1).

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17. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL SHANNON whose telephone number is (571)270-7457. The examiner can normally be reached on Monday through Friday, 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin C. Lee can be reached on 571-272-2963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. S./  
Examiner, Art Unit 2612

/BENJAMIN C. LEE/  
Supervisory Patent Examiner, Art Unit 2612